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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,742	08/18/2003	Steven L. Scott	1376.697US1	4130
21186	7590	06/04/2007		
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER KIM, HONG CHONG	
			ART UNIT 2185	PAPER NUMBER
			MAIL DATE 06/04/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/643,742

Applicant(s)

SCOTT ET AL.

Examiner

Hong C. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-20 is/are allowed.
- 6) ☒ Claim(s) 1-10 21-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/3/05, 2/21/06, 8/17/06</u> | 6) <input type="checkbox"/> Other: _____ |

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Detailed Action

1. Claims 1-38 are presented for examination. This office action is in response to the application filed on 8/18/2003.

Information Disclosure Statement

2. In an attempt to fulfill Applicant's duty to disclose information which is material to patentability according to 37 CFR 1.56, Applicants have submitted a large number of documents for the Examiner to consider. However, it appears from a cursory review of the documents that the vast majority of them are not material to patentability and should not have been submitted. In fact, the sheer number of documents creates an undue burden on the Examiner since if each document is material to patentability, each document must be carefully considered.

According to MPEP 609 (emphasis added): "Although a concise explanation of the relevance of the information is not required for English language information, applicants are encouraged to provide a concise explanation of why the English-language information is being submitted and how it is understood to be relevant. Concise explanations (especially those which point out the relevant pages and lines) are helpful to the Office, particularly where documents are lengthy and complex and applicant is aware of a section that is highly relevant to patentability or where a large number of documents are submitted and applicant is aware that one or more are highly relevant to patentability."

The examiner requests identification of all independent claim limitations identified in the list above that are known to exist in the Background art and IDS documentation filed 06/03/2005, 2/21/06 and 08/17/06. That is, for each claim limitation (including structural and functional limitations linking claim elements, e.g. coupled to, responsive to) identify a corresponding prior art element by page, line, and/or fig. Since applicant is most knowledgeable of the present invention and the IDS documentation, a discussion of the prior art with respect to the instant claims is essential.

The examiner also requests, in response to this Office action, a showing of support for the following: All claim language that does not have antecedent basis in the descriptive portion of the specification. That is, if an exact claim limitation (language such as "the", "said", "a", "in", etc. need not be shown) cannot be found in the descriptive portion of the specification (e.g. by text searching), such claim limitation(s) must be identified and the specification amended to include such claim language without adding new matter.

Applicant must specifically state, in response to this request, that all claim limitations exist in the descriptive portion of the specification, if such is the case; Claim language added to any present claims on amendment and any new claims. Indicate support for claim language/limitation(s) (including structural and functional language linking claim limitations, e.g. coupled to, responsive to) by specifically identifying a word or phrase corresponding to the claim language/limitation. Identify the word or phrase and the page(s) and line no(s), in the specification and/or drawings.

Additionally, Applicant is made aware of the court decision in Penn Yan Boats, Inc. v. Sea Lark Boats, Inc., et al., 175 USPQ 260 (DC SFla, 1972) which stated that

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"Applicant has obligation to call most pertinent prior patent to attention of Patent Office in a proper fashion and to attempt to patentably distinguish his claimed invention from disclosure of patent; failure to take these affirmative steps, particularly when coupled with misrepresentations made to the Patent Office, renders unenforceable the patent issued on his application." Apparently a good reference was buried in the mountain of prior art in the case and never pointed out by the Applicant.

Applicant is reminded that only documents which are "material to patentability" should be submitted. See 37 CFR 1.56 for definition of materiality.

Accordingly, none of the information disclosure statements has been considered. Applicant should submit a new IDS containing only those documents which are material to patentability, and Applicant should call Examiner's attention to particular passages and/or figures of particular documents. Resubmission of the previously submitted documents is not necessary.

Specification

3. Applicants are requested to update the status of the related U.S. patent application accordingly (e.g., U.S. Patent Application Serial No. ####,### filed Sept. 07, 1990, now abandoned; ..., now U.S. Patent #,###,### issued Jan. 01, 1994; or This application is a continuation of Serial Number ####,###, filed on December 01, 1990, now abandoned; ...etc.). Also applicants are requested to include the status of the related U.S. applications or patents in the CROSS-REFERENCE TO RELATED APPLICATIONS section and in any other corresponding area in the specification .

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title should be more specific to differentiate the invention from similar inventions in the patent literature. The "write address and data requests", "comparing the addresses", and "share memory" aspects of the invention should be mentioned in the title so that the title is more descriptive.

5. Specification is objected to because of the following informalities:

In para [0012], it appears that "processors 16" should be changed to – processors 12--.

In para [0043], it is unclear what 48, 42, and 38 are refer to.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 4, 5, 21, 22, 24, 25, 31, 32, 34, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Bowles US Patent No. 5,796,980.

As to claims 1, 21, 31, and 34, Bowles discloses in a computer system (Fig. 1) having a plurality of processors (Fig. 1 Refs. 10 and 15) connected to a shared memory

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(Fig. 1 Refs. 30 and 50), a method of decoupling an address (Fig. 2 Ref. 30-2) from write data (Fig. 2 Ref. 30-1) in a store to the shared memory, comprising: generating a write request address (col. 1 lines 33-35 and Fig. 5 Ref. 610) for a memory write, wherein the write request address points to a memory location in shared memory; issuing a write request (Fig. 5 Refs. 614-626) and to the shared memory, wherein the write request includes the write request address; noting the write request address in the shared memory; comparing (col. 1 lines 50-60, hit or miss), in the shared memory, addresses in subsequent load and store requests to the write request address; transferring the write data to the shared memory (Fig. 5 Ref 626); matching (col. 5 lines 50-55, address and matching data reads on this limitation), within the shared memory, the write request address to the write data; and storing the write data into the shared memory as a function of the write request address (address and matching data reads on this limitation).

As to claims 2, 22, 32, and 36, Bowles further discloses wherein the shared memory includes a store address buffer (Fig. 2 Ref. 30-2) and wherein noting the write request address includes writing the address in the store address buffer (Fig. 5 ref. 626).

As to claims 4 and 24, Bowles further discloses wherein the shared memory includes a cache, wherein noting the write request address includes changing a state in a cache line (Fig. 1 ref. 30) associated with the write request address to "WaitForData"

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(col. 1 lines 57-58, a cache miss reads on this limitation), and wherein comparing addresses in subsequent load and store requests to the write request address includes accessing the cache and stalling if a cache line hit returns a "WaitForData" state (col. 1 lines 57-58, a cache miss reads on this limitation since the cache miss will wait for the data).

As to claims 5 and 25, Bowles further discloses wherein the shared memory includes a bit vector (col. 4 lines 1-2), wherein noting the write request address in the shared memory includes setting one or more bits in the bit vector corresponding to the write request address, and wherein comparing addresses in subsequent load and store requests to the write request address includes comparing bits that would be set corresponding to the load and store request addresses the bits set for the write request address and stalling servicing of the load and store requests if there is a match (col. 1 lines 57-58, a cache miss reads on this limitation since the cache miss will wait for the data).

Claim Rejections - 35 USC ' 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 3, 6-10, 23, 26-30, 33, 35, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowles US Patent No. 5,796,980 in view of Frink et al (Frink) US Patent No 5,530,933.

As to claims 3, 23, and 33, Bowles discloses the invention as claimed the above. However, Bowles does not specifically disclose comparing addresses in subsequent read and write requests includes stalling subsequent read requests to the write request address until the write data is written into the shared memory.

Frink discloses comparing addresses in subsequent read and write requests includes stalling subsequent read requests to the write request address until the write data is written into the shared memory (col. 4 lines 62+) for the purpose of ensuring that data is up to date before processing the read (col. 5 lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate comparing addresses in subsequent read and write requests includes stalling subsequent read requests to the write request address until the write data is written into the shared memory as shown in Frink into the invention of Bowles for the advantages stated above.

As to claims 6 and 26, Bowles and Frink disclose the invention as claimed above. Frink further discloses comparing addresses in subsequent read and write requests includes stalling subsequent read requests to the write request address until the write data is written into the shared memory (col. 4 lines 62+).

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As to claims 7 and 27, Bowles and Frink disclose the invention as claimed above. Frink further discloses comparing addresses in subsequent read and write requests includes servicing the load and store requests to addresses other than the write request address without waiting for the write data to be written to the write request address (col. 4 lines 62+).

As to claims 8 and 28, Bowles and Frink disclose the invention as claimed above. Frink further discloses comparing addresses in subsequent read and write requests includes servicing the load and store requests to addresses other than the write request address without waiting for the write data to be written to the write request address (col. 4 lines 62+).

As to claims 9, 29, and 37, Bowles and Frink disclose the invention as claimed above. Frink further discloses comparing addresses in subsequent read and write requests includes enforcing memory ordering in subsequent read and write requests to the write request address until the write data associated with the first write request is written into the shared memory (col. 4 lines 62+).

As to claims 10, and 30, and 35, Bowles and Frink disclose the invention as claimed above. Frink further discloses issuing a write request includes ensuring that all vector and scalar loads from shared memory for that processor have been sent to

shared memory prior to issuing the write request (col. 4 lines 62+).

As to claim 38, Bowles discloses a computer system, comprises a plurality of processors Fig. 1 Refs. 10 and 15), wherein the processors includes means for issuing a write address (col. 1 lines 33-35 and Fig. 5 Ref. 610 & Fig. 2 Ref. 30-2) separate from data (Fig. 2 Ref. 30-1) to be written to the write address; and a shared memory (Fig. 1 Refs. 30 & 50) connected to the plurality of processors, wherein the shared memory includes: means for receiving a write request (Fig. 5 Refs. 604-626) including a write address. However, Bowles does not specifically disclose means for stalling subsequent loads and stores to the write address in shared memory until the data to be written to the write address is received and written by the shared memory.

Frink discloses means for stalling subsequent loads and stores to the write address in shared memory until the data to be written to the write address is received and written by the shared memory (col. 4 lines 62+) for the purpose of ensuring that data is up to date before processing the read (col. 5 lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate means for stalling subsequent loads and stores to the write address in shared memory until the data to be written to the write address is received and written by the shared memory as shown in Frink into the invention of Bowles for the advantages stated above.

Allowable Subject Matter

8. Claims 11-20 are allowed.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.
2. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).
3. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. ' 1.111(c).
4. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong C Kim whose telephone number is (571) 272-4181. The examiner can normally be reached on M-F 9:00 to 6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 whose telephone number is (571) 272-2100.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7. **Any response to this action should be mailed to:**

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to TC-2100:
(571)-273-8300

Hand-delivered responses should be brought to the Customer Service Window (Randolph Building, 401 Dulany Street, Alexandria, VA 22314).

HK
Primary Patent Examiner
May 29, 2007

